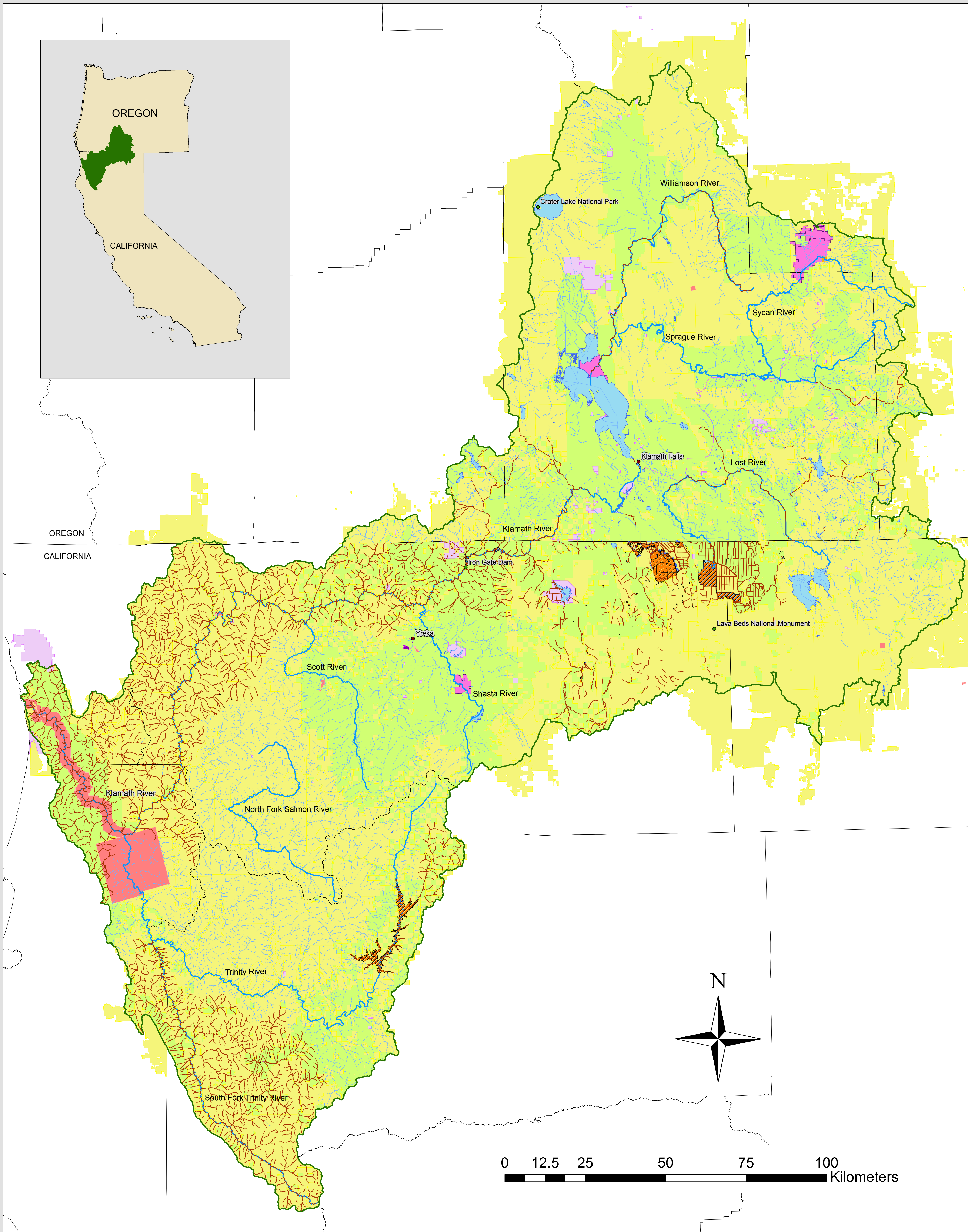


# Impaired Streams in the Klamath River Basin



## Introduction

The Klamath River Basin reaches twelve counties and two states, California and Oregon. It is an area of mountainous beauty that provides critical natural habitat for endangered salmon species, it contains wildlife refuges primarily for avian migration, supports productive forests, and hosts an agricultural community. The geographic extent of the region ranges from 40°N to 43°N and 120°W to 124°W. The basin covers approximately 40,730 square kilometers and is diverse in landscapes. The headwaters begin in the Cascade Mountain Range. The basin continues southwest encompassing the Siskiyou and Klamath mountains of the Coast Range before reaching the California coast to the Pacific Ocean. The region has high plateaus in the Cascade Range, steep mountainous terrain, lava beds, large lakes, marshes and forests.

Water quality and quantity have become a critical and controversial issue over the past fifteen years. Waters that are polluted or degraded to levels that no longer meet the state water quality standards are listed and reported by States, territories, and authorized tribes every even year to the EPA under the Clean Water Act Section 303(d). Commonly referred to as "303(d) Impaired Waters," this data set provides the location for impaired waters. This map was created to help address current issues of water quality in relation to the land ownership adjacent to the impaired waters within the Klamath Basin.

## Methods

This map was made using ArcGIS® software. Data was collected from shapefiles and geodatabases downloaded from the internet (please see "Sources" for specific list of references). All of the data was re-projected to Universal Transverse Mercator projection with the World Geodetic System 1984 datum.

Land ownership data was received as a shapefile for each county. These were merged together, then buffered to the basin boundary. The ownership categories were then selected by attribute data and made into new files to get seamless basin ownership data. Other data sets were also clipped down to the Klamath Basin region and merged or selected into new files to get seamless basin data.

Analysis on stream length was performed by calculating the geometry in ArcGIS®. 303(d) Impaired Streams that intersect or border the designated land ownership types were clipped to a new file and then calculated for each ownership type.

## Results

Almost 37% of rivers and streams in the Klamath River Basin are listed as 303(d) Impaired Waters. There are approximately 22,825 km of river and streams in the Klamath River Basin. Approximately 8,360 km of the basins' streams are listed as 303(d) Impaired Streams.

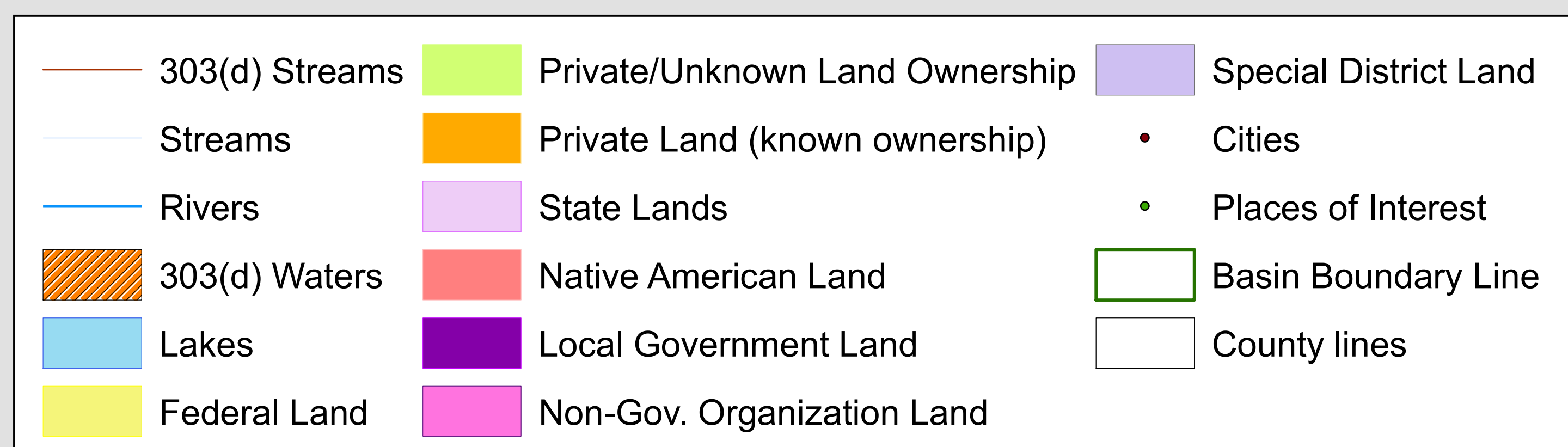
Much of the land in the basin is Federal Government owned, and the majority of impaired streams border these lands. The table below lists land ownership and the total length of combined 303(d) streams that lie within or along the land.

Ownership	Length of 303D Streams (km)	Count
Federal	5082.584	2806
State	71.59	51
Native American	268.115	177
Local Government	0.156	1
Non-government Org.	6.483	2
Unknown	2930.584	874

## Discussion and Conclusion

Acquiring land ownership data proved difficult. Cadastral data was collected but as the data was only of spatial outlines and did not contain information on who owned the land it has been left off the map. Therefore, land ownership data was derived from the United States Geological Survey Gap Analysis Program (GAP), Protected Areas Database of the United States (PADUS). Land areas not included in the PADUS data have been listed as 'unknown ownership'.

This map shows the distribution of impaired waters throughout the Klamath River Basin. More research and data collection is needed in order to assess privately owned lands and its uses in relation to the impaired waters.



Created by: Jessica Picucci  
June 4, 2013

Projection: Universal Transverse Mercator  
Datum: World Geodetic System 1984

## Sources:

California Department of Forestry and Fire Protection, 2009.  
Oregon/Washington Bureau of Land Management, 2007.  
StreamNet Project, Pacific States Marine Fisheries Commission, 2012.  
United States Department of Agriculture /Natural Resources Conservation Service, 2012.  
United States Environmental Protection Agency, Office of Water; 303(d) Listed Impaired Waters NHD Indexed Dataset, 2013.  
United States Fish and Wildlife Service, 2010.  
United States Geological Survey; National Hydrography Dataset (NHD), 2013.  
United States Geological Survey Gap Analysis Program (GAP); Protected Areas Database of the United States (PADUS) version 1.2, 2011.